

BY E-MAIL

January 8, 2014

Mr. Roger W. Papler, P.G.
 Engineering Geologist
 San Francisco Bay Regional Water Quality Control
 Board
 1515 Clay Street, Suite 1400
 Oakland, CA 94612

TDY Industries, LLC

Edgard Bertaut
1000 Six PPG Place
Pittsburgh, PA 15222-5479
(412) 395-3052 FAX (412) 394-3010
Mobile (301) 526-1710

RE: Requirement for Vapor Intrusion Evaluation Workplan for Former Teledyne/Spectra-Physics Site, Mountain View, Santa Clara County, California

Dear Mr. Papler,

We are in receipt of the San Francisco Regional Water Quality Control Board's December 20, 2013 request for a vapor intrusion evaluation workplan by January 8, 2014 to include:

- Cold weather residential indoor air sampling during the months of January and February 2014;
- Commercial indoor air sampling with the HVAC system turned off in the on-property buildings at the former Spectra-Physics and Teledyne properties;
- Vapor intrusion evaluation in residential and commercial buildings where groundwater-TCE levels exceed 5 ug/L; and
- Comparison of indoor air sampling results to the TCE short-term removal action levels and USEPA's updated long-term TCE screening levels.

Please find enclosed:

- *January 8, 2014 Work Plan Addendum for Vapor Intrusion Evaluation of Residential Properties in the Off-Property Study Area, Former Teledyne/Spectra-Physics Sites, 1300 Terra Bella Avenue and 1250 Middlefield Road, Mountain View, California.*
- *Commercial Air Sampling Results for Breathing Zones table* comparing indoor air sampling results to new short-term removal action levels and updated regional screening levels. (Note that the comparison of residential air sampling results to new short-term removal action levels and updated regional screening levels is included in Table 1 of the enclosed *Work Plan Addendum*).

These documents were prepared by ARCADIS on behalf of TDY Industries, LLC, for the former Teledyne Semiconductor Site and Thermo Fisher Scientific, Inc, for the Spectra-Physics Site. TDY Industries, LLC and Thermo Fisher Scientific, Inc., are collectively referred to as "the Companies".

As shown in the attached *Work Plan Addendum* and *table*, there have been no detections in breathing zone samples collected from commercial and residential buildings of TCE above the new short-term removal action levels.

The attached *Work Plan Addendum* addresses cold weather residential indoor air sampling and includes a provision for the comparison of indoor air sampling results to various action levels including USEPA's TCE short-term action levels. Please note that the attached *Work Plan Addendum* anticipates resampling of residential properties before performing mitigation, given the dramatic reductions in TCE concentrations in shallow groundwater underlying nearby residential properties, as shown on the attached isoconcentration contours (Figures 1 and 2).

**Requirement for Vapor Intrusion Evaluation Workplan for Former Teledyne/Spectra-Physics Site
Mountain View, Santa Clara County, California**

January 8, 2014

As you know, we submitted on December 19, 2013 our *Work Plan Addendum for Vapor Intrusion Evaluation of Fourteen Properties in the Off-Property Study Area, Former Teledyne/Spectra-Physics Sites, 1300 Terra Bella Avenue and 1250 Middlefield Road, Mountain View, California*. That *Work Plan Addendum* included a provision for the comparison of indoor air sampling results to various action levels including USEPA's TCE short-term action levels.

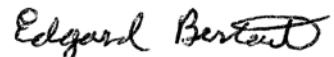
In response to comments received from Ms. Morash on December 20, 2013, regarding the *Work Plan Addendum for Vapor Intrusion Evaluation of Fourteen Properties in the Off-Property Study Area, Former Teledyne/Spectra-Physics Sites*, we note that all three of the comments pertain to actions to be taken at the completion of sampling. In order to move forward with the work in a timely manner, the Companies would prefer to proceed with sampling in accordance with the *Work Plan Addendum*. Then, consistent with our past practice, we will expeditiously submit the sampling results to you for review and discussion regarding path forward.

Please note that work plans addressing indoor air sampling with the HVAC system turned off in the on-property buildings at the former Spectra-Physics and Teledyne properties and addressing vapor intrusion evaluation of remaining residential and commercial buildings where groundwater-TCE levels exceed 5 ug/L will be prepared and submitted in due course.

Should you have any questions, please contact Leigh Neary (ARCADIS) at 415-432-6905, Erica Kalve (ARCADIS) at 415-491-4530, extension 22, or me at 301-526-1710.

Regards,

TDY INDUSTRIES, INC



Edgard Bertaut
Senior Environmental Manager

Enclosures

Copies:

Ms. Melanie Morash, USEPA
Mr. Don Bradshaw, PG, ARCADIS
Ms. Erica Kalve, PG, ARCADIS
Ms. Leigh Neary, ARCADIS
Mr. Chris Lutes, ARCADIS
Ms. Amy Goldberg Day, ARCADIS
Mr. Mark Rollins, Thermo Fisher Scientific
Mr. Jim Diel, Union Pacific Railroad

Table 1
Commercial Air Sampling Results for Breathing Zones
Former Spectra-Physics and Former Teledyne Semiconductor Facilities
Mountain View, California

(concentrations reported in micrograms per cubic meter)

(Results Updated September 2013)

Sample ID	Sample Date	Sample Type	TCE	cis-1,2-DCE	VC	PCE	trans-1,2-DCE	1,1-DCA	1,2-DCB	1,1,1-TCA	Chloroform	Freon 113
Tier 1 - Comparison to Background/Outdoor Ambient Air												
NBCB1-OA-5	08/31/2011	OA	<0.19	<0.14	<0.045	<0.24	<0.69	<0.14	<0.21	<0.19	0.18	0.52
NBCB2-OA-13	08/31/2011	OA	<0.20	<0.15	<0.048	<0.25	<0.74	<0.15	0.77	<0.20	<0.18	0.56
SPCB3-OA-19	09/01/2011	OA	<0.19	<0.14	<0.045	<0.24	<0.69	<0.14	<0.21	<0.19	<0.17	0.57
NBCB4-OA-25	09/01/2011	OA	<0.19	<0.14	<0.046	<0.24	<0.70	<0.14	<0.21	<0.19	<0.17	0.53
NBCB-5-OA-45	12/20/2012	OA	<0.17	<0.12	<0.040	0.38	<0.61	<0.12	<0.19	<0.17	<0.15	0.53
NBCB-6-OA-35	12/20/2012	OA	<0.16	<0.12	<0.037	0.29	<0.58	<0.12	<0.18	<0.16	<0.14	0.51
NBCB-7-OA-36	12/20/2012	OA	<0.16	<0.12	<0.037	0.26	<0.58	<0.12	<0.18	<0.16	<0.14	0.56
NBCB-8-OA-55	2/6/2013	OA	<0.17	<0.12	<0.040	<0.21	<0.62	<0.13	<0.19	<0.17	0.24	0.62
NBCB-9-OA-63	2/6/2013	OA	<0.17	<0.13	<0.041	<0.22	<0.64	<0.13	<0.19	<0.18	0.22	0.62
NBCB-10-OA-68	2/6/2013	OA	<0.17	<0.13	<0.041	<0.22	<0.64	<0.13	<0.19	<0.18	0.28	0.67
NBCB-11-OA-74	2/6/2013	OA	<0.18	<0.13	<0.043	<0.23	<0.67	<0.14	<0.20	<0.18	0.21	0.64
NBCB-11-OA-82	4/11/2013	OA	<0.17	<0.12	<0.040	<0.21	<0.62	<0.13	<0.19	<0.17	<0.15	0.59
NBCB-12-Ambient	7/18/2013	OA	<0.19	<0.14	<0.046	<0.24	<0.72	<0.15	<0.22	<0.20	0.21	0.54
Tier 2 - Comparison to Long-Term Health Risk-Based Screening Criteria												
Industrial/Commercial Screening Level (May 2010) ¹	6.1		260*	2.8	2.1	260	7.7	880	22,000	0.53	130,000	
Industrial/Commercial Screening Level (November 2013) ²	3		260*	2.8	47	260	7.7	880	22,000	0.53	130,000	
Tier 3 - Comparison to Short-Term Health Risk-Based Screening Criteria												
Acute Screening Level (February 2012) ³	10,748		793*	1,278	1,357	793	NA	NA	10,914	488	NA	
Acute Screening Level (July 2013) ⁴	NA		793*	1,278	1,357	793	NA	NA	10,914	488	NA	
Short-Term Screening Levels (February 2012) ³	537		793*	77	NA	793	NA	NA	3,820	244	NA	
Short-Term Screening Levels (July 2013) ⁴	NA		793*	77	NA	793	NA	NA	3,820	244	NA	
Interim Indoor Short-Term Response Action Levels ⁵	7		NA	NA	2	NA	NA	NA	NA	NA	NA	
Indoor Air Sample Results												
NBCB1-BZ-6	08/31/2011	BZ	<0.18	<0.13	<0.042	<0.22	<0.65	<0.13	<0.20	<0.18	0.77	0.53
NBCB1-BZ-7	08/31/2011	BZ	<0.18	<0.13	<0.042	<0.22	<0.66	<0.13	<0.20	<0.18	0.95	0.57
NBCB2-BZ-9	08/31/2011	BZ	<0.17	<0.13	<0.041	<0.22	<0.64	<0.13	<0.19	<0.18	0.31	0.54
SPCB3-BZ-14	09/01/2011	BZ	<0.18	<0.14	<0.044	<0.23	<0.68	<0.14	<0.21	<0.19	0.20	0.62
SPCB3-BZ-15	09/01/2011	BZ	0.50	<0.14	<0.045	0.55	<0.69	<0.14	<0.21	0.31	0.31	0.56
SPCB3-BZ-16	09/01/2011	BZ	0.80	<0.13	<0.043	0.38	<0.67	<0.14	<0.20	2.1	0.30	0.76
NBCB4-BZ-20	09/01/2011	BZ	0.36	<0.13	<0.042	<0.22	1.2	<0.13	<0.20	<0.18	0.34	0.51
NBCB4-BZ-21 (duplicate)	09/01/2011	BZ	0.37	<0.13	<0.041	<0.22	1.2	<0.13	<0.19	<0.18	0.35	0.52
NBCB4-BZ-24	09/01/2011	BZ	0.50	<0.13	<0.043	<0.23	1.4	<0.14	<0.20	<0.18	0.38	0.58
NBCB4-BZ-26	09/01/2011	BZ	0.41	<0.14	<0.044	<0.23	1.3	<0.14	<0.21	<0.19	0.38	0.54

Table 1
Commercial Air Sampling Results for Breathing Zones
Former Spectra-Physics and Former Teledyne Semiconductor Facilities
Mountain View, California

(concentrations reported in micrograms per cubic meter)

(Results Updated September 2013)

Sample ID	Sample Date	Sample Type	TCE	cis-1,2-DCE	VC	PCE	trans-1,2-DCE	1,1-DCA	1,2-DCB	1,1,1-TCA	Chloroform	Freon 113
NBCB-5-BZ-28	12/20/2012	BZ	<0.19	<0.14	<0.045	<0.24	<0.69	<0.14	<0.21	<0.19	<0.17	0.53
NBCB-5-BZ-30 (duplicate)	12/20/2012	BZ	<0.18	<0.14	<0.044	<0.23	<0.68	<0.14	<0.20	<0.19	<0.17	0.52
NBCB-6-BZ-31	12/20/2012	BZ	<0.19	<0.14	<0.045	<0.24	<0.69	<0.14	<0.21	<0.19	<0.17	0.51
NBCB-6-BZ-32 (duplicate)	12/20/2012	BZ	<0.19	<0.14	<0.045	<0.24	<0.69	<0.14	<0.21	<0.19	<0.17	0.54
NBCB-6-BZ-33	12/20/2012	BZ	<0.17	<0.12	<0.040	0.29	<0.63	<0.13	<0.19	<0.17	<0.15	0.51
NBCB-7-BZ-37	12/20/2012	BZ	<0.17	<0.13	<0.041	<0.22	<0.64	<0.13	<0.19	<0.18	<0.16	0.44
NBCB-7-BZ-38	12/20/2012	BZ	<0.18	<0.13	<0.043	<0.23	<0.67	<0.14	<0.20	<0.18	<0.16	0.44
NBCB-7-BZ-40	12/20/2012	BZ	<0.18	<0.13	<0.043	<0.23	<0.67	<0.14	<0.20	<0.18	<0.16	0.42
NBCB-7-BZ-41	12/20/2012	BZ	<0.18	<0.13	<0.043	<0.23	<0.67	<0.14	<0.20	<0.18	<0.16	0.44
NBCB-8-BZ-50	2/6/2013	BZ	3.4	<0.12	<0.040	0.50	<0.62	<0.13	<0.19	<0.17	0.63	0.65
NBCB-8-BZ-51	2/6/2013	BZ	<0.17	<0.12	<0.040	<0.21	<0.62	<0.13	<0.19	<0.17	0.46	0.63
NBCB-8-BZ-52	2/6/2013	BZ	0.6	<0.13	<0.042	<0.22	<0.66	<0.13	<0.20	<0.18	0.46	0.63
NBCB-8-BZ-53	2/6/2013	BZ	6.4	0.38	<0.044	0.26	<0.68	<0.14	<0.21	<0.19	0.39	0.69
NBCB-8-BZ-54 (duplicate)	2/6/2013	BZ	6.3	0.40	<0.043	0.26	<0.67	<0.14	<0.20	<0.18	0.39	0.67
NBCB-8-BZ-91	9/12/2013	BZ	0.66	<0.13	<0.042	1.4	<0.65	<0.13	<0.20	<0.18	0.37	0.52
NBCB-8-BZ-95	9/12/2013	BZ	0.37	<0.13	<0.042	0.46	<0.65	<0.13	<0.20	<0.18	0.26	0.64
NBCB-8-BZ-96	9/12/2013	BZ	0.59	<0.12	<0.040	0.26	<0.63	<0.13	<0.19	<0.17	1.9	0.61
NBCB-9-BZ-57	2/6/2013	BZ	<0.18	<0.13	<0.042	<0.22	<0.65	<0.13	<0.20	<0.18	0.25	0.61
NBCB-9-BZ-58	2/6/2013	BZ	<0.17	<0.13	<0.041	<0.22	<0.64	<0.13	<0.19	<0.18	0.29	0.62
NBCB-9-BZ-61	2/6/2013	BZ	<0.17	<0.12	<0.040	<0.21	<0.63	<0.13	<0.19	<0.17	0.29	0.59
NBCB-10-BZ-64	2/6/2013	BZ	<0.18	<0.13	<0.042	<0.22	<0.65	<0.13	<0.20	<0.18	0.40	0.64
NBCB-10-BZ-65	2/6/2013	BZ	<0.18	<0.13	<0.042	0.29	<0.66	<0.13	<0.20	<0.18	0.31	0.60
NBCB-10-BZ-66	2/6/2013	BZ	<0.17	<0.13	<0.041	<0.22	<0.64	<0.13	<0.19	<0.18	0.27	0.60
NBCB-10-BZ-67 (duplicate)	2/6/2013	BZ	<0.17	<0.13	<0.041	<0.22	<0.64	<0.13	<0.19	<0.18	0.30	0.60
NBCB-11-BZ-70	2/6/2013	BZ	0.57	<0.13	<0.043	<0.23	<0.67	<0.14	<0.20	<0.18	0.26	0.64
NBCB-11-BZ-71	2/6/2013	BZ	5.2	<0.14	<0.044	<0.23	<0.68	<0.14	<0.21	<0.19	0.28	0.62
NBCB-11-BZ-72 (duplicate)	2/6/2013	BZ	5.4	<0.14	<0.045	<0.24	<0.70	<0.14	<0.21	<0.19	0.28	0.64
NBCB-11-BZ-73	2/6/2013	BZ	<0.18	<0.13	<0.043	<0.23	1.6	<0.14	<0.20	<0.18	0.26	0.64
NBCB-11-BZ-77	4/11/2013	BZ	<0.17	<0.13	<0.041	<0.22	<0.63	<0.13	<0.19	<0.17	<0.16	0.60
NBCB-11-BZ-78	4/11/2013	BZ	<0.17	<0.12	<0.040	<0.21	<0.61	<0.12	<0.19	<0.17	0.16	0.59
NBCB-11-BZ-79	4/11/2013	BZ	<0.18	<0.13	<0.043	<0.23	<0.67	<0.14	<0.20	<0.18	<0.16	0.62
NBCB-11-BZ-81	4/11/2013	BZ	<0.17	<0.13	<0.041	<0.22	<0.63	<0.13	<0.19	<0.17	<0.16	0.60

Table 1
Commercial Air Sampling Results for Breathing Zones
Former Spectra-Physics and Former Teledyne Semiconductor Facilities
Mountain View, California

(concentrations reported in micrograms per cubic meter)

(Results Updated September 2013)

Sample ID	Sample Date	Sample Type	TCE	cis-1,2-DCE	VC	PCE	trans-1,2-DCE	1,1-DCA	1,2-DCB	1,1,1-TCA	Chloroform	Freon 113
NBCB-12-BZ-83	7/18/2013	BZ	<0.18	<0.14	<0.044	<0.23	<0.68	<0.14	<0.21	<0.19	0.30	0.57
NBCB-12-BZ-84	7/18/2013	BZ	<0.19	<0.14	<0.045	<0.24	<0.70	<0.14	<0.21	<0.19	0.25	0.57
NBCB-12-BZ-85	7/18/2013	BZ	<0.18	<0.14	<0.044	<0.23	<0.68	<0.14	<0.21	<0.19	0.40	0.54
NBCB-12-BZ-86	7/18/2013	BZ	<0.19	<0.14	<0.045	<0.24	<0.70	<0.14	<0.21	<0.19	0.48	0.55
NBCB-12-BZ-88	7/18/2013	BZ	0.22	<0.14	<0.044	<0.23	<0.68	<0.14	<0.21	<0.19	0.37	0.58
NBCB-12-DUP (duplicate to BZ-88)	7/18/2013	BZ	<0.19	<0.14	<0.045	<0.24	<0.69	<0.14	<0.21	<0.19	<0.17	0.55
NBCB-12-BZ-90	7/18/2013	BZ	<0.18	<0.13	<0.043	<0.23	<0.67	<0.14	<0.20	<0.18	0.36	0.56

Notes:

1. USEPA Regional Screening Levels (RSLs), revised May 2010. Industrial Air RSLs are derived for exposure durations of 8 hours per day, 250 days per year for 25 years.
2. USEPA Regional Screening Levels (RSLs), revised November 2013. Available at: <http://www.epa.gov/region9/superfund/prg/>
Industrial Air RSLs are derived for exposure durations of 8 hours per day, 250 days per year for 25 years.
3. Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Levels (MRLs), revised February 2012. Available at: http://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls_february_2012.pdf
Acute MRLs are derived for exposure durations of 1 to 14 days. Short-term (intermediate) MRLs are derived for exposure durations of >14 to 364 days.
4. ATSDR MRLs, revised July 2013. Available at: <http://www.atsdr.cdc.gov/mrls/mrllist.asp>
Acute MRLs are derived for exposure durations of 1 to 14 days. Short-term (intermediate) MRLs are derived for exposure durations of >14 to 364 days.
5. USEPA Interim Indoor Air Short-Term Response Action Levels for Commercial/Industrial Buildings (based on a 10-hour work day) . Letter from USEPA to Stephen Hill (RWQCB). "EPA Region 9 Guidelines and Supplemental Information Needed for Vapor Intrusion Evaluations at the South Bay National Priorities List (NPL) Sites". December 3.

Units in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) at 25° Celsius and 1 atmosphere.

Bold values represent detected concentrations.

* = Trans-1,2-DCE MRLs and RSLs are used for cis-1,2-DCE

1,1-DCA = 1,1-dichloroethane

cis-1,2-DCE = cis-1,2-dichloroethene

TCE = trichloroethylene

1,2-DCB = 1,2-dichlorobenzene

NA = not available

trans-1,2-DCE = trans-1,2-dichloroethene

1,1,1-TCA = 1,1,1-trichloroethane

OA = outdoor air sample location

VC = vinyl chloride

BZ = breathing zone sample location

PCE = tetrachloroethene

